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IS 3957 (1966, Reaffirmed 1983): Quality Tolerances for Water for Ice Manufacture. UDC 663.61 : 621.58



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“Knowledge is such a treasure which cannot be stolen”

REAFFIRMED

IS : 3957 - 1966
(Reaffirmed 1983)

Indian Standard
QUALITY TOLERANCES FOR
WATER FOR ICE MANUFACTURE

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Indian Standard

QUALITY TOLERANCES FOR WATER FOR ICE MANUFACTURE

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Indian Standard

QUALITY TOLERANCES FOR WATER FOR ICE MANUFACTURE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 24 September 1966, after the draft finalized by the Water Sectional Committee had been approved by the Chemical Division Council.

0.2 Ice is manufactured in a number of food industries, in cold storage plants and exclusively in ice-making industry. Good quality ice should be clear, colourless, free from air bubbles, snowy butts and heavy cores. It should not shatter when handled. On melting, it should give a water of potable quality in its bacteriological, physical and chemical features. Hence the quality of water used in ice making is of utmost public health importance.

0.3 In preparing this standard, assistance has been obtained from the following publications:

United States of America. California State Water Pollution Control Board. Mckee and Wolf. Water quality criteria. Ed 2 (Publication No. 3A). 1963. Sacramento.

Special Technical Publication 148-D. 1959. Manual on industrial water. Ed 2. American Society for Testing and Materials, USA.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the quality tolerances for water used in ice manufacture.

2. TOLERANCES

2.1 The water shall comply with the tolerances given in Tables 1 to 3 for its bacteriological; physical and chemical; and radioactive characteristics when tested according to the methods given in IS : 1622-1964† and

*Rules for rounding off numerical values (revised).

†Methods of sampling and test for microbiological examination of water used in industry.

IS : 3025-1964*. Reference to the relevant clauses of these standards is given in col 4 of Table 1, Table 2 and Table 3.

TABLE 1 TOLERANCES FOR BACTERIOLOGICAL QUALITY

(Clause 2.1)

SL No.	CHARACTERISTIC	TOLERANCE	METHOD of TEST (REF TO CL No. IN IS : 1622-1964*)
(1)	(2)	(3)	(4)
i)	Coliform bacteria, MPN index per 100 ml, <i>Max</i>	Less than 1	3.2
ii)	Standard plate count, per ml, <i>Max</i>	100	5

*Methods of sampling and test for microbiological examination of water used in industry.

TABLE 2 TOLERANCES FOR PHYSICAL AND CHEMICAL QUALITY

(Clause 2.1)

SL No.	CHARACTERISTIC	TOLERANCE	METHOD OF TEST (REF TO CL No. IN IS : 3025-1964*)
(1)	(2)	(3)	(4)
i)	Colour (Hazen units), <i>Max</i>	5	5
ii)	Turbidity, units, <i>Max</i>	5	6
iii)	Odour	None	7
iv)	pH	6.5 to 9.2	8
v)	Total dissolved solids, mg/l, <i>Max</i>	1 000†	12
vi)	Alkalinity (as CaCO ₃), mg/l, <i>Max</i>	100	13
vii)	Total hardness (as CaCO ₃), mg/l, <i>Max</i>	600	16
viii)	Sulphate (as SO ₄), mg/l, <i>Max</i>	200	20
ix)	Fluoride (as F), mg/l, <i>Max</i>	1.5	23
x)	Chloride (as Cl), mg/l, <i>Max</i>	250	24
xi)	Cyanide (as CN), mg/l, <i>Max</i>	0.01	27
xii)	Selenium (as Se), mg/l, <i>Max</i>	0.05	28
xiii)	Iron (as Fe), mg/l, <i>Max</i>	0.3	32
xiv)	Magnesium (as Mg), mg/l, <i>Max</i>	125	34
xv)	Manganese (as Mn), mg/l, <i>Max</i>	0.2	35
xvi)	Copper (as Cu), mg/l, <i>Max</i>	1.0	36
xvii)	Lead (as Pb), mg/l, <i>Max</i>	0.1	37
xviii)	Chromium (as Cr ⁺⁺), mg/l, <i>Max</i>	0.05	38
xix)	Zinc (as Zn), mg/l, <i>Max</i>	15.0	39
xx)	Arsenic (as As), mg/l, <i>Max</i>	0.2	40
xxi)	Phenolic substances (as C ₆ H ₅ OH), mg/l, <i>Max</i>	0.001	54

*Methods of sampling and test (physical and chemical) for water used in industry.

†For clear, transparent ice, total dissolved solid content should not exceed 300 mg/l.

*Methods of sampling and test (physical and chemical) for water used in industry.

TABLE 3 TOLERANCES FOR RADIOACTIVITY

(Clause 2.1)

Sr No.	CHARACTERISTIC	TOLERANCE	METHOD OF TEST (REF TO CL No. IN IS : 3025-1964*)
(1)	(2)	(3)	(4)
i)	<i>Alpha emitters, μ c/ml, Max</i>	10^{-6}	} 58
ii)	<i>Beta emitters, μ c/ml, Max</i>	10^{-6}	

*Methods of sampling and test (physical and chemical) for water used in industry.

3. SAMPLING

3.1 Representative test samples of water shall be drawn as prescribed in 2 of IS : 1622-1964* and 2 of IS : 3025-1964†.

4. TEST METHODS

4.1 Tests shall be carried out as prescribed in the appropriate clauses, indicated against the characteristic in Table 1, Table 2 and Table 3. of IS : 1622-1964* and IS : 3025-1964†.

*Methods of sampling and test for microbiological examination of water used in industry.

†Methods of sampling and test (physical and chemical) for water used in industry.

